

WHAT IS CLAIMED IS:

1. A method for inducing an enhanced immunological response against an HIV-1 antigen in a mammalian host, said method comprising the steps of:
 - 5 (a) inoculating the mammalian host with a recombinant adenoviral vector of a first serotype which is at least partially deleted in E1 and devoid of E1 activity comprising a gene encoding an HIV-1 antigen or immunologically relevant modification thereof; and thereafter
 - (b) inoculating the mammalian host with a boosting immunization comprising
10 a recombinant adenoviral vector of a second serotype which is at least partially deleted in E1 and devoid of E1 activity comprising a gene encoding the HIV-1 antigen or immunologically relevant modification thereof.
2. A method in accordance with claim 1 wherein the HIV-1 antigen is HIV-1 gag.
- 15 3. A method in accordance with claim 1 wherein the HIV-1 antigen is HIV-1 nef.
4. A method in accordance with claim 1 wherein the HIV-1 antigen is HIV-1 pol.
5. A method in accordance with claim 1 wherein at least one gene
20 encoding the HIV-1 antigen or immunologically relevant modification thereof comprises codons optimized for expression in a mammalian host.

6. A method in accordance with claim 1 wherein one or more of the recombinant adenoviral vectors comprise a gene expression cassette, said gene expression cassette which comprises:

- (a) a nucleic acid encoding an HIV-1 antigen;
- 5 (b) a heterologous promoter operatively linked to the nucleic acid encoding the antigen; and
- (c) a transcription termination sequence.

7. A method in accordance with claim 6 wherein the gene expression cassette in at least one of the recombinant adenoviral vectors is inserted into the E1
10 region.

8. A method in accordance with claim 6 wherein the promoter is an immediate early human cytomegalovirus promoter.

9. A method in accordance with claim 6 wherein the transcription termination sequence is a bovine growth hormone polyadenylation and transcription
15 termination sequence.

10. A method for inducing an enhanced immunological response against an HIV-1 antigen in a mammalian host, said method comprising the steps of:

(a) inoculating the mammalian host with a recombinant adenoviral vector of serotype 5 at least partially deleted in E1 and devoid of E1 activity comprising a gene
20 encoding an HIV-1 antigen or immunologically relevant modification thereof; and thereafter

(b) inoculating the mammalian host with a boosting immunization comprising a recombinant adenoviral vector of serotype 6 at least partially deleted in E1 and

devoid of E1 activity comprising a gene encoding the HIV-1 antigen or immunologically relevant modification thereof.

11. A method in accordance with claim 10 wherein the recombinant adenoviral vector of step (a) is deleted of base pairs 451-3510.
- 5 12. A method in accordance with claim 10 wherein the recombinant adenoviral vector of step (b) is deleted of base pairs 451-3507.
13. A method in accordance with claim 10 wherein at least one gene encoding the HIV-1 antigen or immunologically relevant modification thereof comprises codons optimized for expression in a mammalian host.
- 10 14. A method in accordance with claim 10 wherein the HIV-1 antigen is HIV-1 gag.
15. A method in accordance with claim 10 wherein the HIV-1 antigen is HIV-1 nef.
16. A method in accordance with claim 10 wherein the HIV-1 antigen is HIV-1 pol.
- 15 HIV-1 pol.
17. A method in accordance with claim 10 wherein one or more of the recombinant adenoviral vectors comprise a gene expression cassette, said gene expression cassette which comprises:
 - (a) a nucleic acid encoding an HIV-1 antigen;
 - 20 (b) a heterologous promoter operatively linked to the nucleic acid encoding the antigen; and
 - (c) a transcription termination sequence.

18. A method in accordance with claim 17 wherein the gene expression cassette in at least one of the recombinant adenoviral vectors is inserted into the E1 region.

19. A method in accordance with claim 17 wherein the promoter is an immediate early human cytomegalovirus promoter.

20. A method in accordance with claim 17 wherein the transcription termination sequence is a bovine growth hormone polyadenylation and transcription termination sequence.

21. A method for inducing an enhanced immunological response against an HIV-1 gag antigen in a mammalian host, said method comprising the steps of:

(a) inoculating the mammalian host with a recombinant adenoviral vector of serotype 5 at least partially deleted in E1 and devoid of E1 activity comprising a gene encoding an HIV-1 gag antigen or immunologically relevant modification thereof; and thereafter

(b) inoculating the mammalian host with a boosting immunization comprising a recombinant adenoviral vector of serotype 6 at least partially deleted in E1 and devoid of E1 activity comprising a gene encoding the HIV-1 gag antigen or immunologically relevant modification thereof.

22. A method for inducing an enhanced immunological response against an HIV-1 antigen in a mammalian host, said method comprising the steps of:

(a) inoculating the mammalian host with a recombinant adenoviral vector of serotype 5 at least partially deleted in E1 and devoid of E1 activity comprising a gene

encoding an HIV-1 antigen or immunologically relevant modification thereof; and thereafter

(b) inoculating the mammalian host with a boosting immunization comprising a recombinant adenoviral vector of serotype 35 at least partially deleted in E1 and
5 devoid of E1 activity comprising a gene encoding the HIV-1 antigen or immunologically relevant modification thereof.

23. A method in accordance with claim 22 wherein at least one gene encoding the HIV-1 antigen or immunologically relevant modification thereof comprises codons optimized for expression in a mammalian host.

10 24. A method in accordance with claim 22 wherein the HIV-1 antigen is HIV-1 gag.

25. A method in accordance with claim 22 wherein the HIV-1 antigen is HIV-1 nef.

15 26. A method in accordance with claim 22 wherein the HIV-1 antigen is HIV-1 pol.

27. A method in accordance with claim 22 wherein one or more of the recombinant adenoviral vectors comprise a gene expression cassette, said gene expression cassette which comprises:

- 20 (a) a nucleic acid encoding an HIV-1 antigen;
- (b) a heterologous promoter operatively linked to the nucleic acid encoding the antigen; and
- (c) a transcription termination sequence.

28. A method in accordance with claim 27 wherein the gene expression cassette in at least one of the recombinant adenoviral vectors is inserted into the E1 region.

29. A method in accordance with claim 27 wherein the promoter is an
5 immediate early human cytomegalovirus promoter.

30. A method in accordance with claim 27 wherein the transcription termination sequence is a bovine growth hormone polyadenylation and transcription termination sequence.